

# **Factors Affecting Access to Fruit and Vegetables in Chester and the Importance of Eating Healthily: A Case Study of Blacon and Hoole**

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## **ABSTRACT**

### **Introduction**

The link between diet and the aetiology of chronic diseases such as cancer and coronary heart disease is widely accepted. Consumption of fruit and vegetables (F&Vs) is known to have a protective effect on such health issues. Government health policy aims to facilitate positive health behaviours through campaigns such as '5-A-Day'. Research shows that access to and availability of such foods are key to facilitating change and sustainable healthy behaviours. This study examines the access to F&Vs at a community level using the Chester wards of Blacon and Hoole.

### **Methodology**

A phenomenological perspective was adopted to explore the attitudes, perceptions and behaviours of a sample of Chester based adult females living in Blacon, a ward characteristic of multiple deprivation, or Hoole, a ward characteristic of only health deprivation. Qualitative data was collected using semi-standardised interviews and data was analysed using a framework approach.

### **Results**

Few differences emerged between the two wards across all aspects of access. Awareness of the 'five-a-day' campaign was above the national average, however, knowledge of the diet-health relationship was generally poor. Intakes of F&Vs were consistent with national averages (Blacon = 4 portions and Hoole = 4.5 portions). Access to healthy food in both wards was perceived to be 'good'. Time and cost were the barriers most frequently stated to F&V consumption. Reductions in cost of F&Vs and improvements in food preparation skills were the thematic responses for improving intakes of F&Vs most often encountered.

### **Conclusion**

Participants perceived their level of access to healthy food to be 'good' due to the ease of access to more than one supermarket. Participants were aware of the need to consume F&Vs but the desire to include them in their diets was equally positive and negative. Health policy appears to be targeting the right areas of the local communities in Chester however, North West regional strategies are not entirely applicable to the wards studied in this research. Information available and level of access was perceived to be good in both wards, however, a lack of follow-up initiatives has meant that a majority of

participants were unaware of ways to integrate such information and behaviours into their busy lifestyles. This stimulates the need for a local level intervention with a skills based approach.

## **DECLARATION OF ORIGINAL WORK**

I hereby declare that work contained in herewith is original and entirely my own work (unless stated otherwise). It has not been previously submitted in support of a degree, qualification or other course.

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## CHAPTER 1. INTRODUCTION

*“Diet is a key factor for health and well-being”*

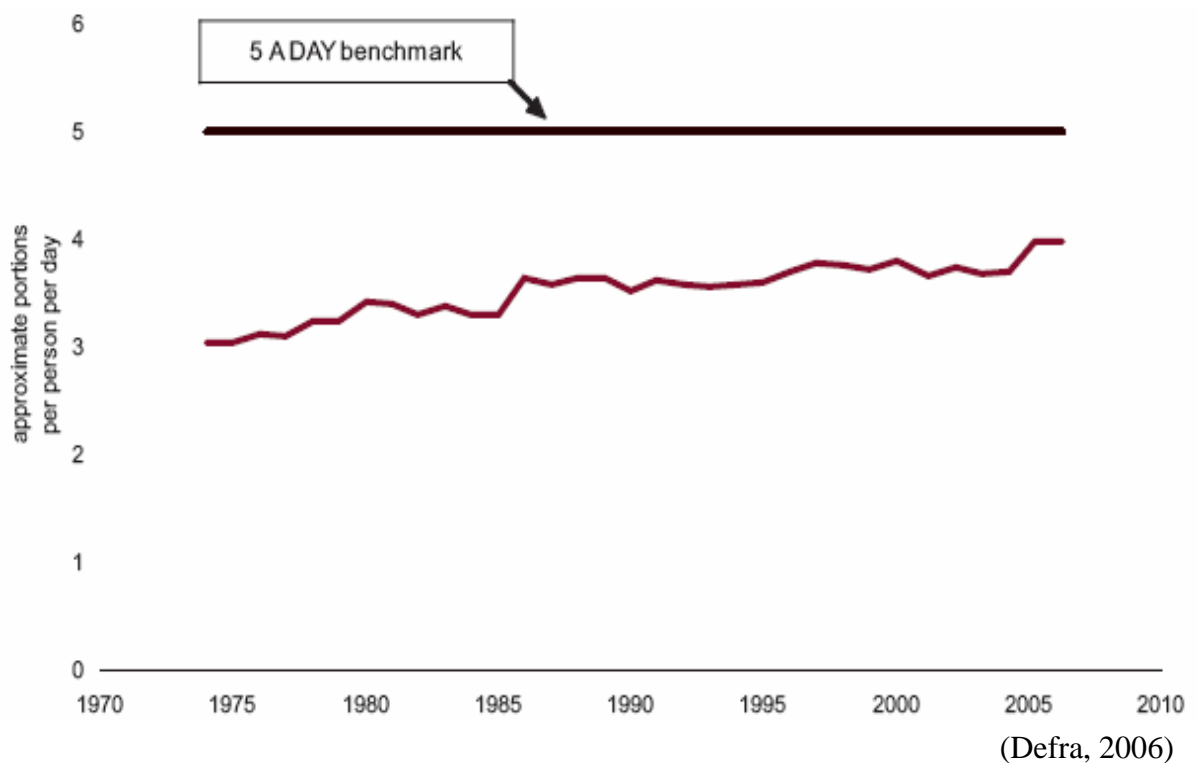
(Potter, 2008, p. 35).

Public Health Nutrition is concerned with the promotion of good health through the medium of nutrition. It also focuses on the primary prevention of nutrition related illness in a population (Nutrition Society, 2008). Studies have shown, and it is now widely accepted, that diet is partly implicated in the aetiology of health problems such as obesity and chronic diseases such as some cancers (Clifford & Kramer, 1993), coronary heart disease (Rimm, Ascherio, Giovannucci, Spiegelman, & Willett, 1996) and non-insulin dependant diabetes mellitus (Horton, 1995). Subsequently, health policy now focuses on the role diet can play in the primary prevention of such illnesses and health problems.

Public health recommendations such as those made by the Department of Health's (DH) White Paper “Choosing Health: Choosing a Better Diet” (2004) advocate the role of fruit and vegetables (F&Vs), amongst others, in the prevention and reduction in risk of developing the aforementioned health problems. As a result, the Government developed a Food and Health Action Plan that focuses on the ways in which health can be improved through better nutrition at all stages of life. One of the key aims of the plan is to “increase the average consumption of a range of F&Vs to at least five portions per day” (DH, 2004, p. 1).

Currently, a large proportion of the population in England consume less than the recommended amount of F&Vs (see Figure 1 below) but more than the recommended amount of fat, saturated fatty acids, salt and sugar (Department for Environment, Food and Rural Affairs (Defra), 2008). Such a diet could contribute to ill health and premature death (Defra, 2006).

Figure 1: Household purchases of fruit and vegetables (excluding potatoes) in England:



More specifically, 28% of men and 32% of women in England consumed five or more portions of F&Vs in 2006, an increase from 22% and 25% respectively in 2001 (National Health Service (NHS), 2008). In 2004, 8% of men and 6% of women consumed no fruit or vegetables (NHS, 2006).

The North West of England has some of the highest levels of dietary related ill health in the country. The North West population has the highest rate for deaths from heart disease and stroke, the second highest rate for deaths from cancer and reported levels of feeling in poor health, and low life expectancy for both males and females (Potter, 2008). The report by Potter (2008) into the health of the North West attributes this situation to the fact that there are significant numbers of people who do not have access to an adequate supply of affordable foods for a healthy diet in the North West.

While these statistics outline the current situation, they do not and cannot explain the reasons why this is so. There are a number of studies that categorise the reasons for these levels of F&V consumption (i.e. access) but few seek explanations from a qualitative, local level to discover in what way those factors are restricting populations from achieving the “five-a-day” benchmark.

Higher rates of chronic diseases have been found in populations of low social class than in middle and upper social classes (Germov & Williams, 2004). In addition, neighbourhood deprivation can be associated with low F&V consumption (Forsyth, Macintyre & Anderson, 1994). While both Chester wards of Blacon and Hoole have areas affected by health deprivation, Chester City Council (2008) (using the ‘Index of Multiple Deprivation’ - income, health, education, employment, crime, the environment, housing and services) define the area of Blacon in Chester as “*deprived*” whereas Hoole is not (*see* Table 4 for further details). For the interest of comparison, these two areas were chosen due to their apparent contrasting status of multiple deprivation to assess the impact of multiple deprivation on access to, and consumption of, F&Vs.

There is also a lack of an evidence base that focuses on those who are responsible for the household food shopping. National Statistics & the Department for Transport (2007) found that females make 37% more food shopping trips per year than males and therefore, may have a major role to play in their household's intake of F&Vs. Consumption of F&Vs appears to increase with age; 17% of men and women aged 16-24 compared with 33% of men and women aged 55-64 in England consumed five or more portions of F&Vs in 2004 (NHS, 2006). The average number of shopping trips also increases with age and only a minimal amount of food shopping trips are undertaken by individuals under the age of 18 (National Statistics & Department for Transport, 2007). This research project will, therefore, concentrate on a female adult population (18 years old and above) as this sample is more likely to be representative of those who are responsible for a household's food shopping.

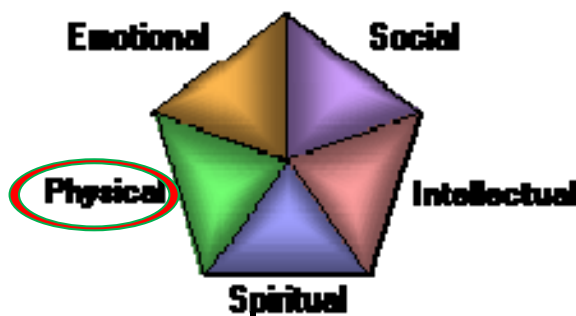
The following report details research into the views and opinions of local residents in Chester (Blacon and Hoole wards). Factors relating to access to healthy food with a particular focus on F&V consumption were explored in order to discover attitudes towards healthy eating and F&V consumption in particular. This report also aims to explain the factors that determine the amount of F&Vs adult females in Chester consume. The findings may then inform future practice concerned with ensuring intake levels achieve a sustainable 'five-a day'. The comparison of Blacon and Hoole wards aims to provide a comparison of populations living in a deprived area (Blacon) versus a non-deprived area (Hoole) according to the Multiple Index of Deprivation (Chester City Council, 2008). Both wards suffer from health deprivation and therefore are of particular interest to the public health field.

## CHAPTER 2. REVIEW OF LITERATURE

### 2.1 The Associations of Health and Nutrition

Before exploring the associations between diet and health, it is important to acknowledge that the status of an individual's health is dependant on a number of compounding factors. The World Health Organisation (WHO) define health as a “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (1948, p. 100). Nevertheless, nutrition has an important and valid role in health.

Figure 2: The Compounding Factors of Health



<i>Physical</i>	Fitness. <b>Nutrition.</b> Medical self-care. Control of substance abuse.
<i>Emotional</i>	Care for emotional crisis. Stress Management
<i>Social</i>	Communities. Families. Friends
<i>Intellectual</i>	Educational. Achievement. Career development
<i>Spiritual</i>	Love. Hope. Charity.

(O'Donnell, 1986)

A healthy and varied diet can help maintain a healthy body weight, enhance general wellbeing and reduce the risk of a number of diseases including heart disease, stroke, cancer, diabetes and osteoporosis (British Nutrition Foundation, 2007). Cardiovascular diseases and cancers together account for almost two-thirds of premature deaths in Britain (British Heart Foundation Statistics, 2005) reinforcing the importance of nutrition to health. According to the Food Standards Agency (FSA, 2008a), a ‘healthy diet’ is

based on breads, potatoes, other cereals and F&Vs. It will also include moderate amounts of milk and dairy products, meat, fish or meat/milk alternatives, and limited amounts of food containing fat or sugar (see Figure 3).

Figure 3. The Eatwell Plate



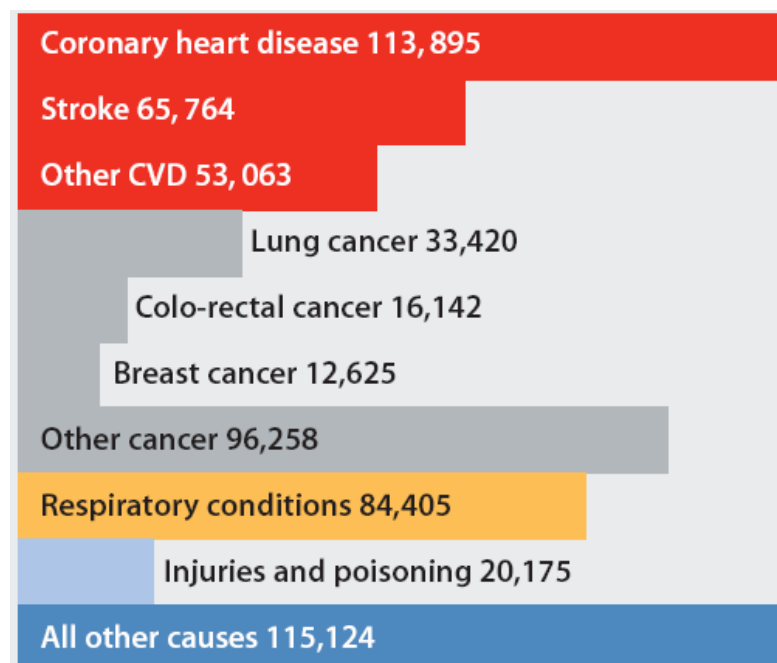
FSA (2008b)

Figure 3 also shows that approximately one-third of our daily diet should be made up from F&Vs. F&V consumption plays a protective role in the onset of chronic diseases such as cardiovascular disease and cancer (Kamphuis et al., 2006). F&Vs also contain vital vitamins and minerals, such as calcium, potassium, vitamins A and C, lycopene and phytochemicals which are known for their disease fighting properties (Primarolo, 2008). They also contain fibre that helps contribute to healthy bowels and provides satiety

which is important for maintaining a healthy weight (FSA, 2008c). McCullough et al. (2002) suggest that by adopting recommended dietary behaviours, including an adequate intake of F&Vs, the population can substantially reduce the risk of suffering from diet-related morbidity and mortality.

The WHO (2002) attributes 4.4% of the overall burden of disease in Europe to low F&V intakes. Coronary Heart Disease alone costs the economy in the United Kingdom (UK) approximately £7,900 million a year (hospital care, drugs, work days lost). Danaei, Vander Hoorn, Lopez, Murray and Ezzati (2005) also suggest that a low F&V intake is one of the leading risk factors for death from cancers world wide.

Figure 4: Deaths in the UK in 2003 by Cause:

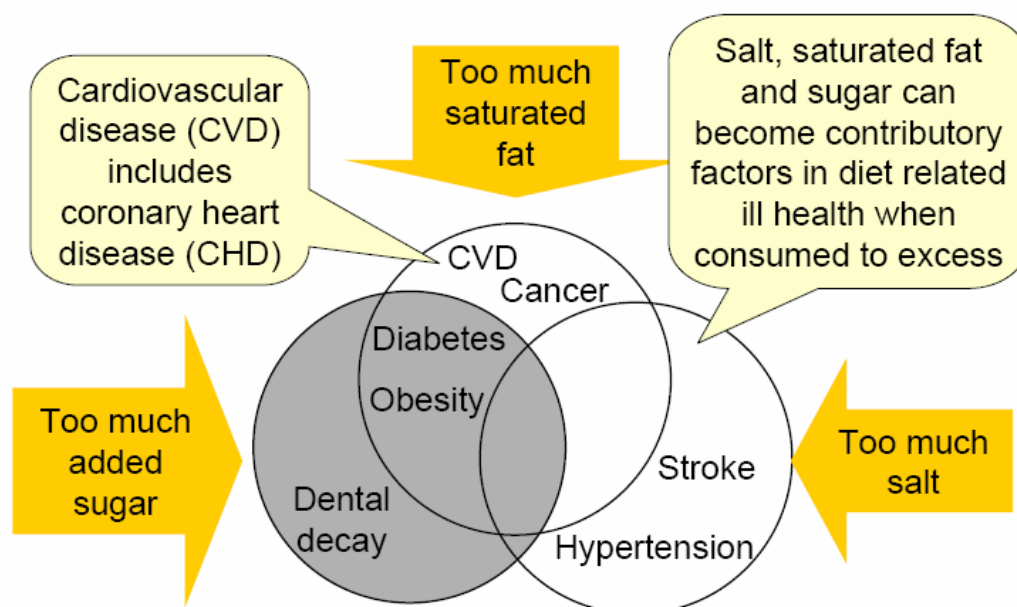


(British Heart Foundation Statistics, 2005)



Figure 4 reinforces the important role diet and particularly F&V intakes have to play in the health of populations worldwide. Figure 5 aims to simplify the complex relationship between diet and health.

Figure 5: The Relationships between Diet and Health



The Cabinet Office (2008)

## 2.2 Access to Healthy Food and Factors Affecting Food Choice

As previously established, F&V intakes in the UK fall below the benchmark of 'five-a-day'. Pollard, Greenwood, Kirk and Cade (2001) argue that in order to encourage changes in dietary behaviour, the determinants of food choice need to be explored and understood.

For there to be access to food, an adequate amount of food must be within the physical reach of households, whether home-grown/home-made or through the market (Pollard et al., 2001). Household food security can only be ensured when the capability to obtain

food exists (Food & Agriculture Organisation (FAO), 2008). Donkin, Dowler, Stevenson and Turner (2000) suggest that ‘access’ is simply being able to attain a variety of healthy foods at a reasonable price. The subject of access to food and healthy food in particular is somewhat fickle. Research in this area is extensive but conflicting. Much research supports a notion/discovery and equally, research quashes such findings as non-existent or insignificant. The existing research into the determinants of access to healthy food is detailed below.

A number of factors that affect food choice are proposed by Brug, Debie, van Assema and Weijts (1994) below. These factors, amongst others, will be explored further in this chapter.

Table 1: Contributing factors to F&V consumption

Contributing Factors	Details
<b>OUTCOME BELIEFS</b>	
Satisfaction	Taste and Satiety were mentioned as influential
Perceived Health Consequences	Consumption of F&Vs were mentioned as beneficial to health and in particular, for losing weight
Social Influences	Influence of members of the same household (partner and family) and others (friends etc)
<b>SELF-EFFICACY AND BARRIERS</b>	
Abilities	Consumption of F&Vs seemed to be dependant on perceived skill and/or knowledge to prepare F&Vs and the perceived amount of time and/or trouble consumption of F&Vs will cost
Availability	Of good and easy-to-get-to points of purchase and lack of F&Vs due to seasonal influences were said to determine F&V consumption
Price	Some F&Vs were perceived to be too expensive when out of season
Season	Strongly associated with the issues of taste, availability and price
Habit	Amount of F&Vs consumed was dependant on what participants were used to
Awareness	Participants stated being unaware of the health consequences of F&Vs and being unaware of what constitutes a portion of F&Vs may be a negative factor in F&V consumption levels.

### **2.2.1 Food Security and Social Inequalities**

Food security is a state in which individuals and populations have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life (FAO, 2003). Food insecurity, as an extremity of poor access to food, occurs when this does not happen. It is the presence or absence of access to healthy food (i.e. F&Vs) that is key in providing food security. Research has found that being food insecure was associated with significantly lower consumption of fruit. Furthermore, individuals with food insecurity had a likelihood of 0.43 (CI 0.25-0.74) for consuming vegetables daily compared to their food-secure counterparts (Tingay et al., 2003).

Townsend, Peerson, Love, Achterberg and Murphy (2001) found that the amount of fruit, salad and vegetables consumed significantly declined as food insecurity increased amongst women. Drewnowski and Specter (2004) suggest that these low F&V intakes may be due to cost restraints and subsequently, energy contributed from fruits, vegetables, meat and dairy foods decrease while energy from cereals, added fats and sweets increase. Such a diet could contribute to ill health and premature death (Defra, 2006).

Although evidence was limited, Townsend et al. (2001) found good local availability of F&Vs to be positively related to intake. However, Lang and Caraher (1998) found that access to food is predominantly determined by income which subsequently affects the physical resources available to access healthy food. For example, the poor have less access to a car, find it harder to get to out-of-town supermarkets and are thus unable to carry and transport large food shops. Despite this, Lang and Caraher (1998) found that

the majority of people *did* shop in supermarkets as they reported that local shops do not provide the services people demand and that food choice and quality were inadequate. In support of this, Dibsdall, Lambert, Bobbin and Frewer (2003) found that car access showed no significant results.

#### *2.2.1.1 Food Deserts*

In the extremes of poor access to healthy food, populations can be said to be living in a 'food desert'. A 'food desert' is an urban district with little or no access to foods needed to maintain a healthy diet (fooddeserts.org, 2008). The debate regarding food deserts in the UK arose largely from Government concern over people living in areas of social deprivation and their frequently inadequate standards of diet and nutrition.

Guy and David (2004) attribute the existence of food deserts to the monopolisation of the food market by supermarkets and found that local shops in Cardiff could not compete on either availability of items or their price due to the economies of scale supermarkets can achieve. A study measuring access to healthy food in Sandwell (UK) also found that small retailers struggled to survive, especially if they try to offer 'healthy' food and perishable goods against competition from larger stores (Dowler, Blair, Donkin, Rex & Grundy, 2001). Further, residential area-based deprivation was found to significantly predict F&V intake, independently of occupational class and educational level (Shohaimi et al., 2004).

However, while there are a number of studies to suggest that food deserts exist in the UK, the existence of food deserts has been suggested to be a 'factoid' (Cummings & Macintyre, 2002). National Statistics and the Department for Transport (2007) also found

that 93% of households in Great Britain are situated within 15 minutes (by foot or public transport – whichever is quickest) of their nearest shop selling groceries. Additionally, 76% of households do their shopping by car, arguably a quicker mode of accessing those shops, so this figure (93%) may have been higher if shopping by car was included.

### *2.2.1.2 Social Inequalities*

Data collection regarding the diets of socioeconomic groups for many sociological studies are somewhat limited as health status is not easily collected retrospectively and longitudinal studies are still rather limited (Taylor, 2007). Government reports such as the Black Report (1988) and the Acheson Report (1998) attribute health inequalities in the UK to, in part, the social environment and in particular, lifestyle, behavioural and environmental factors. The Acheson Report (1998) particularly stated that the root cause of health inequality was poverty. Low Income Groups (LIGs), for example, are said to consume a less healthy diet than High Income Groups (HIGs) (Dibsdall et al., 2003). Dibsdall et al. (2003) suggest that this gap in health may be due to the LIGs having difficulties in being able to access and afford F&Vs. More specifically, the study by Dibsdall et al. (2003) in the UK found that 45% of respondents had no access to a car, but 71% of those without access to a car, still thought visiting a supermarket was easy to do (23% regularly used the local bus service, 15% used taxis and 10% had their shopping delivered). Less than 10% ( $n=50$ ) voiced a problem in getting to a supermarket. Additionally, “very few complained about the choice of fresh, frozen or tinned F&Vs available or about the choice of shops available in their local area” (Dibsdall et al., 2003, p. 164). These findings may suggest that LIGs have minimal difficulty in being able to access F&Vs and perhaps indicate problems with their affordability and an individual’s tastes and preferences.

However, the research by Dibsall et al. (2003) goes on to conclude that the problem of inappropriate diets in the UK is more widespread than in one demographic group.

### **2.2.2 Income and Cost**

One of the most frequently cited barriers to F&V consumption is their cost or affordability. Among the barriers identified by John and Ziebland (2004), the high cost of F&Vs was among the most problematic. The findings of Cade, Upmeier, Calvert and Greenwood (1999) give weight to this statement by discovering that F&V expenditure was the main item making a healthy diet more expensive. A systematic review by Kamphuis et al. (2006) found that income was a determinant of F&V intake (a significantly positive association) and specifically, that people with lower household incomes had a lower F&V consumption (even after adjustment for education and occupational social class).

Households on low incomes are usually located in places where prices of foods recommended for health may be higher in local shops than in large retailers (New Policy Institute, 2000, p. 2). Kamphuis et al. (2006) advocate that people living in disadvantaged areas or on small household budgets may consume fewer F&Vs due to the *perception* that F&Vs are expensive. In 1996, researchers found that basic foodstuffs cost 24% more in small stores than in large supermarkets (New Policy Institute, 2000, p. 2). Dowler, Blair, Donkin, Rex and Grundy, (2001) found that those who shopped in smaller retailers (usually those on lower incomes and at higher risk of diet related diseases) will have difficulty finding some food items, and will find a healthy diet “prohibitively expensive” (p. 63).

However, a recent report by the FSA (2008d) showed that 87% of respondents claimed that healthy eating is important to them, with a strong feeling that budget is not a barrier. Around nine out of ten UK respondents agreed that ‘even if you are on a limited budget you can still eat healthily’ (FSA, 2008d). When broken down by social grade (*see* Appendix A) however, these findings revealed that those of social grade AB were more likely to agree that ‘even if you are on a limited budget you can still eat healthily’ than those in the lower social grade groups (AB’s – 67% agreeing strongly, compared to 59% among C1C2’s and 54% among DE’s) (FSA, 2008d).

Conflicting to this finding may be that, over the last year, the price of F&Vs have increased considerably and may now be more problematic.

Table 2: Selected Price Increases in F&Vs between 2007 and 2008:

Carrots	+ 24.6%
Tomatoes	+ 20.3%
Onions	+ 20.3%
White Seedless Grapes	+ 17%
Apples	+ 16%
Oranges	+ 16%

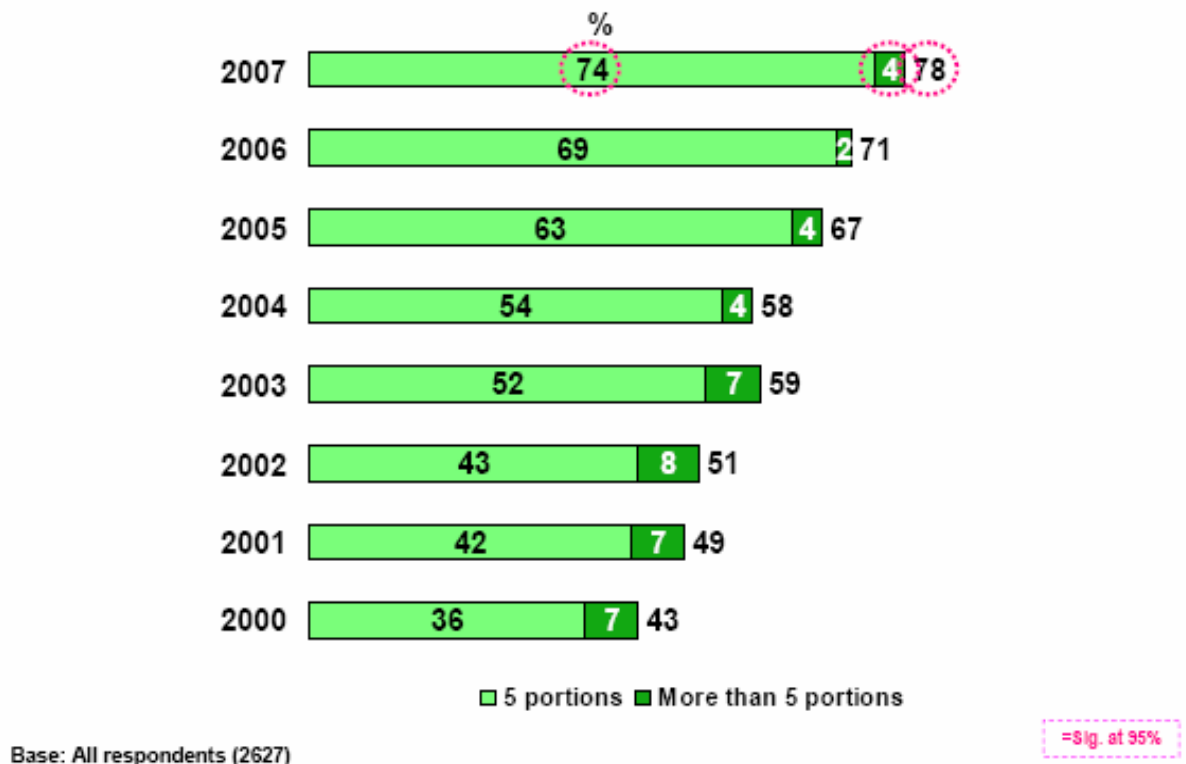
(Adapted from Telegraph Online, 2008)

## 2.2.3 Personal Factors

### 2.2.3.1 Knowledge

Knowledge is also a prominent barrier unearthed by research into the consumption of a healthy diet. A systematic review by Shaikh, Yaroch, Nebeling, Yeh and Resnicow (2008) found a positive association between knowledge and F&V intake. Lawrence et al. (2007) established that a large majority of women living in the UK felt that improving their knowledge of healthy food would be beneficial to their health. Concurrently, Turrell (1998) found there to be limited knowledge about the interrelationships between food, nutrition, health and disease.

Figure 6: Correct knowledge of “at least 5 portions a day”



FSA (2008d)



The FSA (2008d) observed a significant increase in knowledge of ‘at least five portions a day’, with 78% of UK respondents answering correctly in 2007 compared to 71% in 2006.

Dibsdall et al. (2003) found that; of those with no access to a car, only 32% claimed to eat five or more portions of F&V a day and yet 72% still believed they ate healthily which suggests a gap in knowledge of what constitutes a healthy diet. Turrell (1998) supports this notion and suggests further that cultural beliefs, values and meanings play a major role in the food choices people make.

#### *2.2.3.2 Education*

For the above reason, research would seem to suggest a need for nutritional education in order to improve the diets of those at risk (i.e. those who do not follow nutritional guidelines). Taylor (2007) proposes that health education is an important factor as the information and guidance it provides can increase an individual’s autonomy to make informed decisions about health. Turrell, Hewitt, Patterson, Oldenburg and Gould (2002) discovered that participants who attained no educational qualifications beyond school, manual workers, and those from socioeconomically disadvantaged households were less likely to purchase healthy foods. Freisling, Elmadfa and Gall (2006) support this notion stating that education is a strong and independent predictor of nutrient intake and Body Mass Index.

#### 2.2.3.3 *Cooking Ability*

Research also shows *cooking ability* to be a barrier to a healthy diet. Pollard et al. (2001) suggest that “low consumers need to be educated in more quick and easy ways to incorporate F&Vs into their diet” (p. 484).

The FSA (2008d) found that consistently throughout the period of their study, more women (76%) took all or most of the responsibility for household food shopping compared to men (33%). They also found a strong association between responsibility for food shopping and cooking, showing that 85% of those responsible for the food shopping were also exclusively or mainly responsible for the household cooking (FSA, 2008d). Lawrence et al. (2007) also agree that improving cooking skills would show a positive association with health.

Convenience in terms of time available for preparation of food and shopping, availability of shops and simplicity of preparation and cooking, was found to be of less concern to the high consumers of F&Vs than the low consumers (Pollard et al., 2001, p. 484).

#### **2.2.4 Preference**

Individuals’ preferences towards food can largely determine their diet. Shaikh et al. (2008) found attitudes or beliefs to be significantly and positively associated with F&V intake. Falk (1994) suggests that food habits and the type of food choices made are learned preferences shaped by environments endorsing what is appropriate and inappropriate food, irrespective of their nutritional content. This can be observed in the food taboos of various religions (i.e. Muslim and Jewish populations and their abstinence from pork and red meat respectively). In this instance, culturally learned food habits are removed from the nutritional value or taste of such foods.

However, it has also been found that F&Vs were the foods people were most likely to say they were trying to increase their own and their children's consumption of, suggesting an awareness of the importance of F&Vs (FSA, 2008d).

### **2.3 F&V Consumption and the Related Health Issues from a National and Local Perspective**

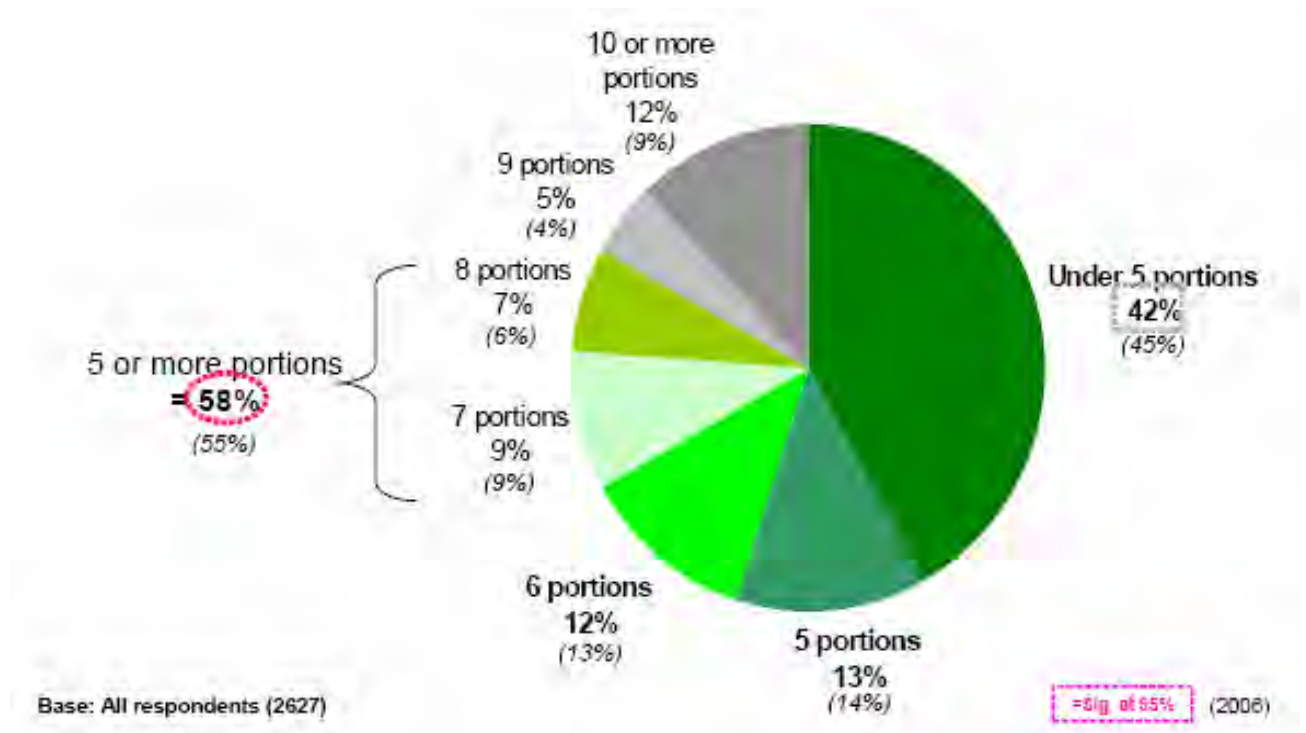
The widely accepted benefits of consuming five or more portions of F&Vs per day have been outlined previously (*see* section 1). The factors affecting the levels of consumption in the UK have also been explored in this chapter, however, it is also important to be aware of the most recent trends in F&V consumption in the UK, and more specifically to this study, in the North West of England and Chester.

In 2006, the average weekly food and non-alcoholic drink expenditure of UK households was £47. Of the £47, £3.60 was spent on vegetables and £2.90 on fresh fruit per household per week (excluding expenditure on tinned or frozen F&V) (National Statistics, 2008). Questions remain whether participants would increase their F&V intakes if they could buy more at a lower price than they can currently.

Assuming that 80 grams is equal to a portion of fruit or vegetables, consuming five portions of F&Vs a day would be equal to 2800 grams (Defra & National Statistics, 2006). If ten percent is allowed for wastage, 3080 grams of F&Vs need to be purchased to be able to achieve the five-a-day benchmark. The above survey also estimated that purchases of F&Vs were approximately 2454 grams on average per person per week which is approximately equivalent to four portions per person per day (after wastage).

Figure 7 below details the number of portions of F&Vs a UK sample claimed to consume in 2007. It shows that 58% (compared to 55% in 2006) of the sample consumed five or more portions of F&Vs (FSA, 2008d). While these figures are encouraging, it is those who do not consistently achieve the five-a-day target that are of interest to the public health industry as they may be ‘at risk’. The above statistics also suggest that 42% of the sample obtained by the FSA (2008d) are not achieving the recommended five-a-day.

Figure 7: Portions of F&Vs consumed yesterday



FSA (2008d)

### 2.3.1 The North West and Chester

A report by Potter (2008) proposes that there are significant numbers of people in the North West that do not have access to an adequate supply of affordable foods for a healthy diet. Further findings are as follows;

- The North West has some of the highest levels of dietary related ill health in the country.
- People living in the more deprived areas and low income families have the worst diets, consuming more unhealthy foods and less F&Vs than those in more affluent areas.

Between 2003 and 2004, household purchases of vegetables (excluding potatoes) were highest in the South West of England and lowest in the North West (Defra & National Statistics, 2006). 47% of those living in the North West claimed to have eaten at least five portions of F&Vs on the previous day. This figure is lower than the national average for England (58%) (FSA, 2008d).

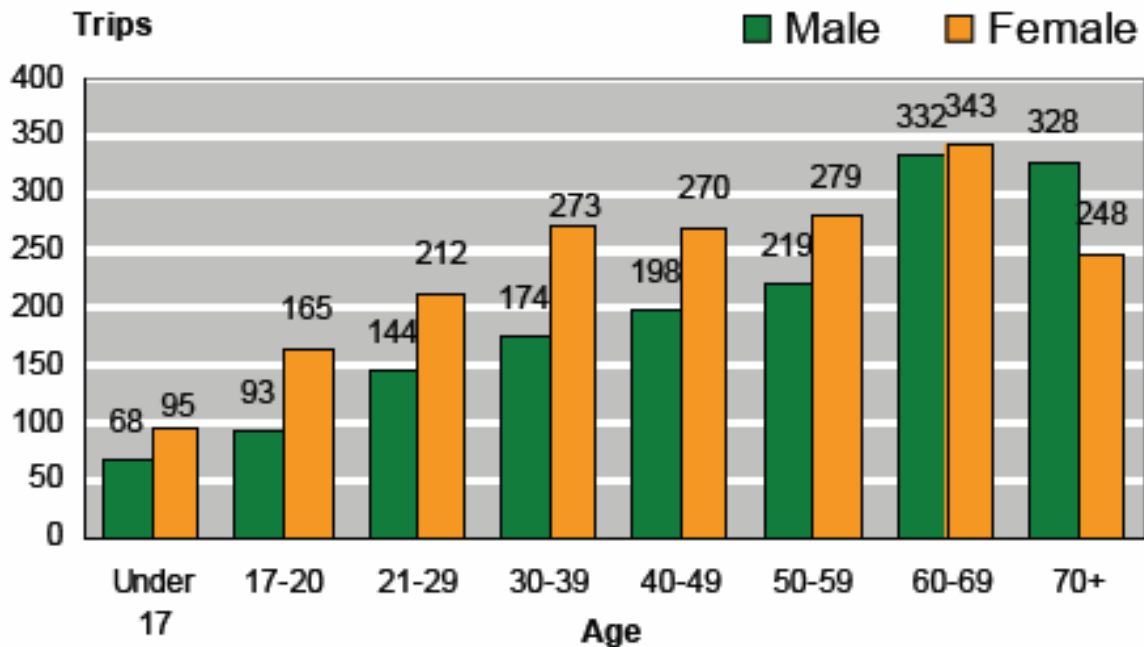
As an example of the need for dietary improvements in the North West, Chester Today (2005) found that if current trends continue unchecked it is predicted that obesity may soon overtake smoking as the main risk factor affecting the health of the community in Chester. Approximately 10,600 women and 11,300 men are obese in the Chester population and 22,700 men and 15,700 women are overweight. It has also been estimated that locally, obesity accounts for around 100 deaths per year and either directly or indirectly is responsible for over 43,000 sick days per year.

Eliminating obesity across the North West could result in 7,000 fewer deaths per year (Chester Today, 2005) supporting the need and importance of improving the diets of the local community and understanding contemporary dietary behaviours.

The most recent ‘Living in Chester Survey’ carried out by Chester Today (2005) found that residents of Chester believe their local shop to be the easiest local service to reach (8.6/10 on the Customer Satisfaction Measurement Model). This study will explore whether local shops are frequently used and the perceived quality and affordability of healthy food and F&Vs in particular.

As established in section 2.3.3.3, those who are responsible for the household food shopping are also more likely to do the household cooking and subsequently may have a major affect on what others in the household consume. On average females make 37% more food shopping trips than males per year.

Figure 8: Shopping trips per person per year by sex and age in 2005



National Statistics and the Department for Transport (2007)

Therefore, females may have a greater responsibility for household consumption than do the other “non-shoppers” in the household.

Pollard et al. (2001) advocate that, “in order to change the dietary behaviour of any population, it is important to take into consideration the motivations for food choice within that population” (p. 479). This dissertation will explore the intake levels of, and attitudes towards, F&Vs by concentrating on a local level representation of women from deprived and non-deprived wards in Chester (according to the Multiple Index of Deprivation). Suggestions as to ways of improving dietary behaviours locally will also be explored.

## **2.4 A Summary of Factors Affecting F&V Consumption as Highlighted in This Chapter**

- A. Access to Transport
- B. Attitudes, Beliefs and Preferences Towards Food
- C. Availability
- D. Cooking Ability and Knowledge
- E. Convenience – Preparing and Accessing F&Vs
- F. Cost/Price of F&Vs
- G. Education
- H. Food Security/Insecurity
- I. Household Income/Cost Restraints/Affordability of F&Vs
- J. Knowledge
- K. Poor Food Choice Locally
- L. Poor Quality of Food Locally
- M. Social Inequality
- N. Socio-Economic Status

## **2.5 RESEARCH AIMS AND OBJECTIVES**

The aim of this research is ‘to discover the perceived level of access to F&Vs of female Chester residents and the determinants of their current consumption behaviours’. This study examines and compares the attitudes, beliefs and behaviours of participants from two contrasting wards in Chester from a community level perspective. The 5 research objectives were to:

1. Ascertain current F&V consumption levels.
2. Identify the key barriers to F&V consumption and achieving the desired ‘5-a-day’, and; Formulate suggestions for improving F&V consumption levels to a consistent 5+ portions per day.
3. Discover how important eating a healthy diet is to the participants.
4. Determine the perceived affect of diet on health.
5. Highlight participants’ food shopping behaviours.



## CHAPTER 3. METHODOLOGY

### 3.1 Research Design

*“research is recognised as central for effective and informed decision making”*

(O’Leary, 2007, p. 5).

This research project was carried out at a community level as participant recruitment and data collection were obtained from within two areas of Chester (Blacon and Hoole). One-on-one interviews (face-to-face) were conducted over two sessions in each of the selected areas. The interviews were audio-recorded to which the participants consented and were only required to participate once.

As established in the literature review, there appears to be a lack of qualitative research into the attitudes and values people have about food, with much of the existing evidence base adopting a less time-consuming approach to research (i.e. questionnaires and surveys).

This research adopted the perspective of a phenomenological paradigm by assuming that the world is socially constructed and subjective. Phenomenology supposes that “any attempt to understand social reality has to be grounded in people’s experiences of that social reality” (Gray, 2005, p. 21). As this study was concerned with the food related experiences and attitudes of residents of Chester, a qualitative methodology was adopted. This approach allowed participants to fully express their thoughts and experiences as it was their perspective that was of interest as opposed to the actual situation (i.e. *“the cost of fruit is too expensive”*). In comparison to quantitative research, “qualitative research seeks a deeper truth” (Greenhalgh, 2006, p. 166) and can allow for more personalised

data to be collected. However, this is not to say there is no place for quantitative research in this subject area, and indeed, quantitative research could follow on from the findings of this research or work in tandem with it.

Specifically, phenomenological interviewing was used to acquire information regarding participants' experiences and attitudes towards food shopping and access to F&Vs as a subcomponent of '*a healthy diet*' (see section 2.1). Interviews, as a method of data collection, are most fittingly used in situations requiring open-ended questions and where the interviewer has to record precisely the answers given by the participants (Oppenheim, 2008 & Gray, 2005). Open-ended questions are, "important in allowing the respondent to say what they think and to do so with greater richness and spontaneity" (Oppenheim, 2008, p. 81). Concurrently, Gray (2005) suggests that, "a well conducted interview is a powerful tool for eliciting rich data on people's views, attitudes and the meanings that underpin their lives and behaviours" (p. 213).

### *3.1.1 Advantages and Disadvantages of the Chosen Method (Semi-Structured Standardised Interviews)*

Advantages:

- Interviews can give prepared explanations of the purpose of the study more convincingly than a covering letter.
- They can more easily reach less educated individuals.
- They can offer standardised explanations to problems that arise (either pre-prepared or consistently used after they first arise) minimising the potential for systematic errors and bias.

- Interviews can attain highly personalised data (views, opinions, attitudes, perceptions).
- There are opportunities for probing and explanations of questions in order for the responses to be relevant to the question. There is little room for misinterpretation of the questions as the interviewer can pre-prepare explanations (i.e. standardised explanations).

Oppenheim (2008)

Disadvantages/Limitations:

- As participation in the interviews was voluntary, the more motivated, better health, better diet individuals may chose to participate.
- The expense of an interviewer, facilities, travel costs and call-backs may be high.

However, as the interviewer was not paid, there was no need for call-backs and the facilities used were provided by the toddler groups which were located locally, costs were kept to a minimum.

- Interviewing and the subsequent work produced from the interviews (i.e. transcription) can be very time consuming and labour intensive (Gray, 2005 & Pope, Ziebland & Mays, 2000).

A solution to this was to design and implement a schedule in addition to keeping the interviews as concise as possible while gaining an adequate amount of relevant information.

Other methods such as *focus groups* and *questionnaires* were considered due to their potentially lower monetary and time costs but were subsequently rejected. A postal questionnaire, for example, can readily produce a response rate of  $\leq 40\%$  whereas interviews can generally do better (Oppenheim, 2008 & Gray, 2005). Interviews are also inclusive of individuals who cannot read or write as questions and answers can be expressed verbally. The opposite is true in, for example, questionnaires. Interviews also have the added advantage of being able to explain any misunderstandings and can obtain responses of greater depth and sensitivity (Oppenheim, 2008 & Gray, 2005). Subsequently, one-on-one interviews were the chosen method for data collection.

Focus groups were rejected as they required obtaining an uncertain number of participants to attend a meeting at a specific time which may not have been convenient to all individuals that wanted to participate. Interviews were more flexible and could be tailored to the schedules of the participants (i.e. during their normal routine).

- Barriers can be formed due to the opposing sexes of the interviewer (male) and the participants (female) (Oppenheim, 2008).

As participation is voluntary, participants are more likely to be willing to express their beliefs as they are not forced into providing answers. It was also clarified at the start of the interview that there were no particular answers looked for by the interviewer and that the participants' opinions would be the correct answer. This helped to reinforce the importance of truthful answers. Participants were also aware that they could withdraw from the interviews at any time.

- Certain words can carry different meanings for different people (Oppenheim, 2008). An example of which could be '*diet*' whereby some may interpret the

word to mean '*the foods they normally eat*' whereas others may construe the word to mean '*the foods they eat when they are dieting*'.

The potential for this occurring was minimised by using the word 'diet' but then also using a pre-prepared explanation of '*the foods that you normally eat*' which was the desired interpretation. Oppenheim (2008) suggests that interviewer judgement should be used to ensure that all participants understand the questions to the same level while no added meanings are portrayed.

### 3.2 Participants

The research aimed to obtain as many participants as possible, within a set timeframe (*see* 3.3 below), from each of the two selected areas in Chester (Blacon and Hoole). Gray (2005) suggests that phenomenological research should include between five and fifteen participants and that when using interviews as a research method, a sample size of eight is often sufficient. For these reasons, a **minimum** sample size of eight participants from Blacon and eight from Hoole was set (16 in total). As the research targeted a specific population (females aged  $\geq 18$  years old), a large sample size was not needed.

#### 3.2.1 Participant Characteristics

Blacon and Hoole were chosen as the subject populations for comparison because they highlighted problems of health deprivation, but only Blacon suffered from multiple deprivation according to the Index of Multiple Deprivation (Chester City Council, 2008). However, in contrast to Blacon, Hoole does not suffer from multiple deprivation (Chester City Council, 2008). Therefore, these two wards of Chester provided an interesting comparison of deprivation status while both were of interest to the public health industry as they suffered from 'health deprivation'.

Table 3: The seven indices of Multiple Deprivation (Chester City Council, 2008):

Indices	Blacon	Hoole
Income	Y	N
Employment	Y	N
Health Deprivation and Disability	Y	Y
Education, Skills and Training	Y	N
Barriers to Housing and Services	N	N
Crime	Y	N
Living Environment	N	N

Y = Has areas that highlight this type of deprivation

N = Does not have areas that highlight this type of deprivation.

Table 4: Inclusion/Exclusion Criteria.

Exclusion Criteria	Inclusion Criteria	Justification
Males.	Females aged $\geq 18$ years old.	National Statistics and the Department for Transport (2007) found that females make 37% more food shopping trips per year than males and therefore, may have a <b>major</b> role to play in their household's intake of F&V.  As previously established, individuals under the age of 18 did not frequently shop for food.
Non-residents of Blacon or Hoole.	Residents of Blacon or Hoole	For the purpose of comparison between a deprive area and non-deprived area of Chester (according to the Multiple Index of Deprivation).
Individuals unable to contribute verbally	Individuals who can communicate verbally.	Interviews were audio-recorded for improved accuracy of transcriptions.
Individuals $\leq 17$ years old	Females aged $\geq 18$ years old	<i>As above.</i>

Twenty-four female participants (12 from Blacon and 12 from Hoole) were obtained for the research sample.

### *3.2.2 Recruitment of Participants*

Participants were accessed through a convenience sample from one parent and toddler group in each area. Blacon Community Centre Toddler Group and All Saints Minis Toddler Group (All Saints Church Centre, Hoole) were selected and provided sample populations of 35 and 56 adult females respectively over two sessions in each area. Toddler groups were selected for recruiting participants because their populations/members were highly likely to be females and 18 years old or above as the majority of members were mothers, grandmothers or childminders.

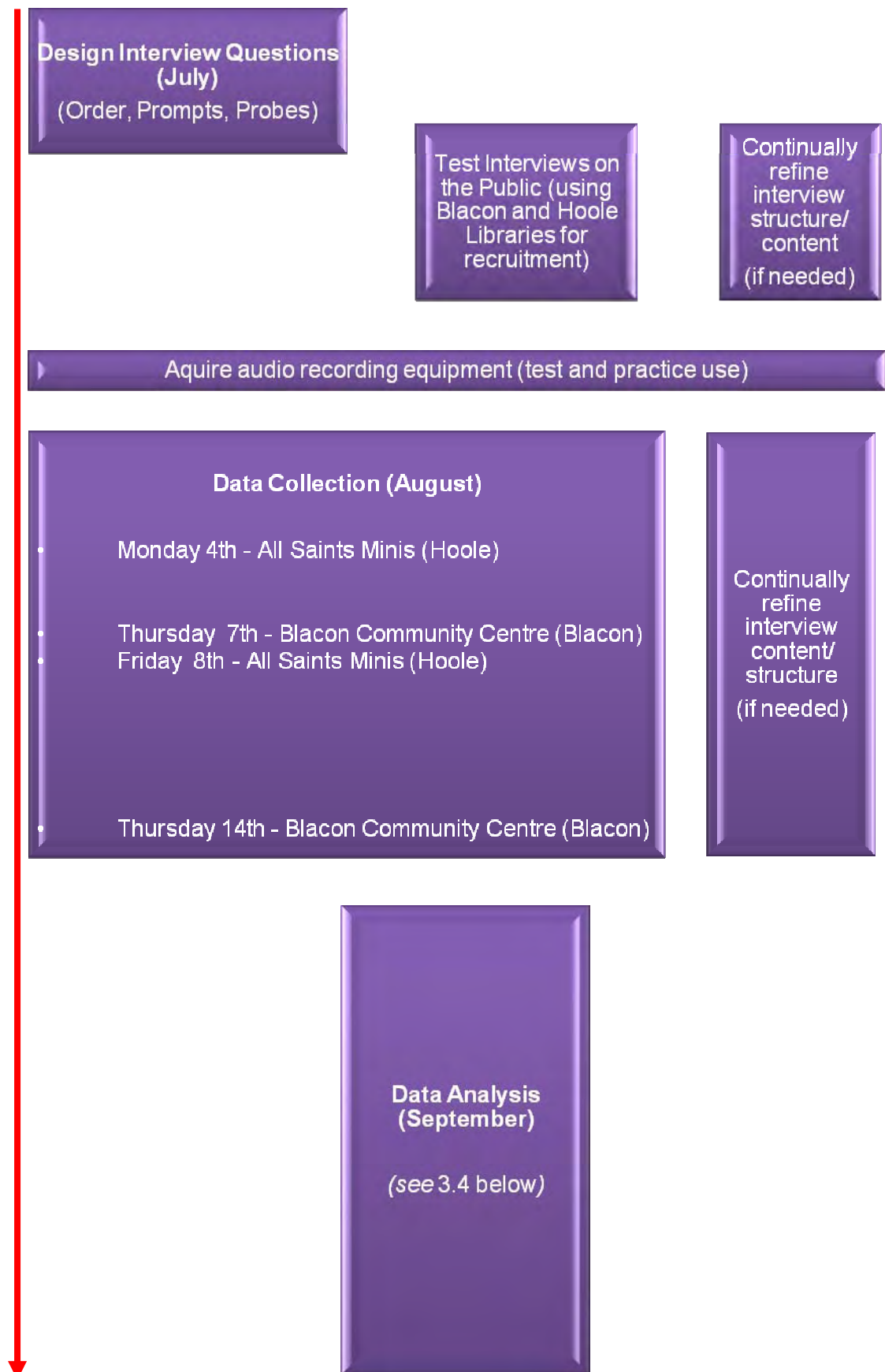
The similarity in the number of participants who volunteered in Blacon and Hoole (12 in each) was due to the interviews taking approximately ten minutes each and both toddler groups (1.5 hours long) having a twenty minute (approximately) introduction and 'sing along' session (at which the researcher was introduced) before the parents were released from the group to play individually with their children. The remaining 70 minutes meant that a maximum of seven interviews could be completed at each session and fourteen at each toddler group.

Participants took part in the interviews on an entirely voluntary bases. The researcher did not approach any participants and waited in the interview room for the participants to volunteer. This helped to minimise the risk of incorporating selection bias into the sample.

Group leaders/programme managers had given permission for the interviews to take place prior to the day of interviewing.

### 3.3 Procedure

Figure 9: Research Timeframe





### *3.3.2 Interview Procedure*

Interviews were conducted over two one-and-a-half-hour sessions at each toddler group. The Blacon Community Centre Toddler Group in Blacon ran every Thursday morning from 10am which meant that data was collected over two consecutive weeks. The groups in Blacon were voluntary drop-in sessions. The All Saints Minis Toddler Group in Hoole ran on Monday and Friday mornings from 10am with 30 parents attending the Monday session (1 male in attendance) and 30 attending the Friday session (3 males in attendance).

At the beginning of each toddler group it was explained that the research required female only participants. Those who chose to participate were then asked a few quick questions to verify that the inclusion criteria were satisfied.

Before the interviews could commence, participants were asked to read the Participant Information Sheet (*see* Appendix B) and were given time to ask any questions and consider their participation. If participants were happy to continue, they completed a consent form (*see* Appendix C) which was then kept in a secure location and separately to their answers in order to maintain confidentiality. Participants also consented to the interviews being audio-recorded for the purposes of transcription. Additionally, the consent forms could be used for follow-up research if the participants are required in the future as they contained the participants' addresses but did not link them in any way to their answers.

The interview would then take place at the pace of the participants' answers. At the end of each interview, the participants were asked to complete their socio-demographic

information in a box at the end of the question sheet to provide data that could later be used for comparisons, but also to confirm they agreed that their answers were honest and of their own opinion (ensuring validity). The participant would then leave the interview room and the interviewer waited for the next participant to volunteer.

### 3.4 Data Analysis

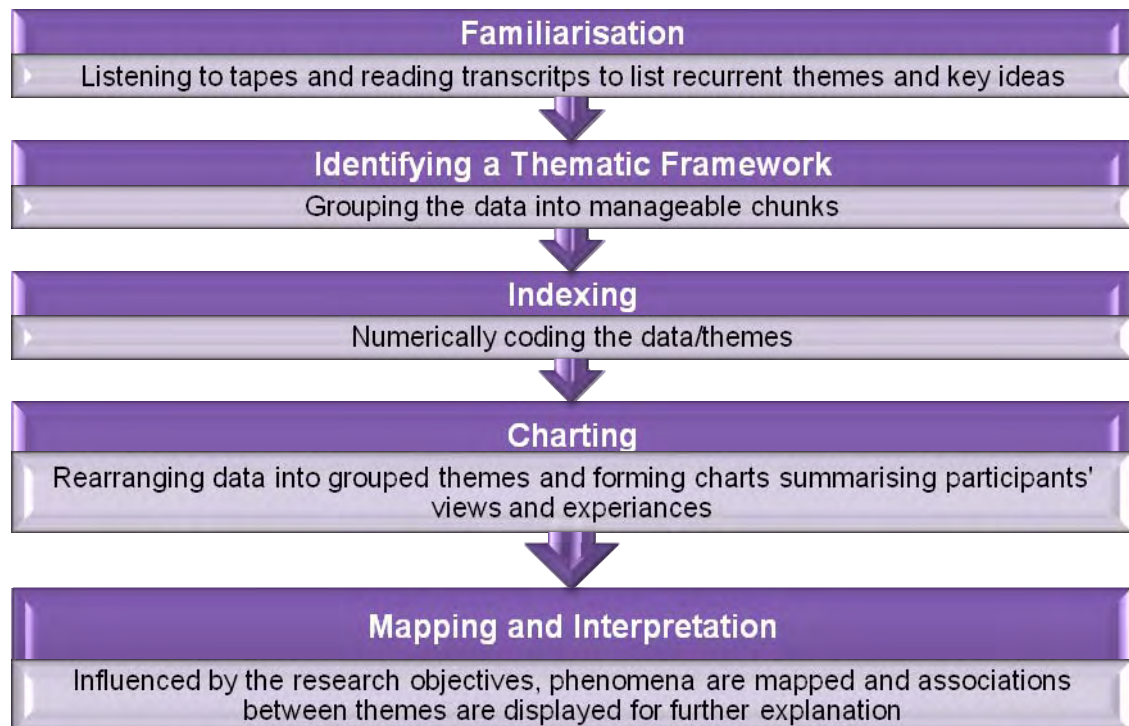
A simplified process of analysing qualitative research:



As the barriers to consuming a healthy diet are widely researched and highlighted by existing literature, the data analysis of the qualitative data collected took a deductive approach to either prove or disprove the findings of the literature in relation to the findings of the two wards in Chester (Blacon and Hoole). In addition, an inductive approach was adopted to discover any new themes that materialised from the opinions of the participants that do not appear in the existing literature which may form grounded theory/new concepts.

Thematic exploration of the raw data was used to collate the themes of participants' responses. This form of data reduction was important as it resulted in more manageable and coherent data as the transcripts of 24 interviews produced a large volume of information. The grouped responses were then coded and explained in further detail. Quantitative averages (*mean, median and range*) were used as a simple overview of the groups in this study. Subsequently, n-values were used to provide a scale of data saturation.

The process of data analysis used can be best summarised by the following framework:



Pope, Ziebland and Mays (2000)

Furthermore, socio-demographic data was obtained to compare the attitudes and experiences of the participants to their socio-demographic status in order to elicit any differences. The socio-demographic information was also used to map where the participants lived in order to show the spread of localities. Participants' addresses were mapped to the middle of their postcode street so as to maintain their confidentiality and not highlight their exact address.

### 3.4.1 Research Quality and Integrity

Qualitative data plays a major role in research and drives both policy and theory. Despite the contemporary popularity of qualitative research, challenges still remain in proving the quality of such research as there are no statistical tests of significance. However, the

credibility of qualitative research can be maximised by controlling the potential for bias and systematic errors. This can help maximise the potential validity, reliability and transferability of the research.

*Systematic errors* may have occurred if, for example; less educated participants were rushed/hurried, one-sided explanations to questions were offered, there was over prompting, or, the more ‘intelligent looking’ participants were not shown the example portion sizes card (*see* Appendix D). Such an occurrence would have resulted in an over or under-estimation of the true meaning of the participants’ answers (Oppenheim, 2008).

In order to combat the potential for systematic errors, a structured interview plan was created (*see* Appendix E) with pre-devised, standardised prompts as this standardised the interview process and minimised the risk of deviation in the type, order and delivery of questions and prompts between participants. A semi-structured interview using *factual* questions was adopted as they allowed the interviewer to ask the same questions with some freedom to offer explanations and/or correct any confusion that may have occurred. This was important because Oppenheim (2008) believes that achieving a ‘sameness’ of questions between participants is a “manifest impossibility” (p. 67). Instead, it is important to ensure the questions *mean* the same to all participants.

In order to ensure that participants felt at ease, no pre-defined interview timeframes were set and participants were given as much time as was needed to fully express their answers. All participants were shown the example portion sizes card without exception and prompts were standardised to all participants.

*Bias* can also prevent objective consideration of the research findings;

Table 5: Main Causes of Bias:

Before the interview	After the interview
Interviewer ignoring the sampling instructions. Adverse impression management by the interviewer.	Poor maintenance of rapport. Altering factual questions. Careless prompting. Poor management of show cards. Bias probes. Asking questions out of sequence. Biased recording of verbatim answers. Poor management of problem participants. Inadequate management of situational problems or of special procedures.

(Oppenheim, 2008, p. 96)

In order to reduce the probability of incorporating bias in the research;

- The interviews were practiced prior to collecting data:- A draft interview structure was used to test the interview process and content. The researcher and test interviewees then reviewed the data and structure to establish whether the information gained represented the true answers of the test participants. As the interviews were kept simple, all test participants ( $n=4$ ) agreed that the notes taken and audio recorded fairly reflected their answers. Furthermore, the practice interviews helped to refine and restructure the interview process (i.e. question order and wording, prompts and probes) resulting in an appropriate interview structure before data collection.

- The standardised, semi-structured parameters were maintained and adhered to consistently throughout all interviews.
- The interviewer maintained minimal dialog with the participants so as to allow participants to fully express their answers and to not over-prompt or over-probe (the ‘interviewer effect’). Oppenheim (2008) suggests that if the interview became a conversation (a two-way process of communication), it would “lose much of its value because of the biases introduced by the interviewer” (p. 66).
- The interviews were audio recorded to ensure all noted responses were of a true value.

The *validity* of the information collected was maximised by using explanations of questions and standardised prompts throughout all interviews. This enabled participants to expand on their initial answers in order to gain a complete answer. The lengths of the interviews were not pre-defined. They were long enough for in-depth information to be expressed but short enough to maintain the interest of the participants. Participants were subtly redirected to the question if they began to ‘go off subject’. In addition, validity was maintained/maximised by adhering to the questions shaped by existing literature. Arksey and Knight (1999) suggest that these methods will help strengthen the validity of the data.

Triangulation of different methods was considered to ensure a high level of validity, however, due to the restraints of resources and time, one-on-one interviews were used in isolation.

### **3.5 Ethical Issues**

Ethical approval was obtained from the School of Applied and Health Sciences School Research Ethics Committee at the University of Chester in July 2008 (FREC Ref. No. 249/08/AS/BIOL). A copy of the approval letter can be found in Appendix F.